Web-based Collaboration for Virtual Teams

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Session Objectives

- Present virtual teaming and knowledge sharing concepts

- Provide an overview of Web-based collaboration tools

- Get feedback from the Environmental Community
  - **Needs and Next Steps**

Agenda
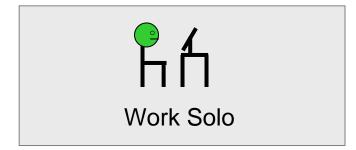
- Overview: Virtual Teams   1:15 – 1:45
- Web-based Collaboration:
    Getting Started   1:45 – 2:00
- Wiki Demo   2:00 – 2:30
- BREAK   2:30 – 2:45
- ESWG Overview   2:45 – 3:00
- Portal Demo   3:00 – 3:20
- Group Exercise   3:20 – 3:50
- Wrap-up   3:50 – 4:00

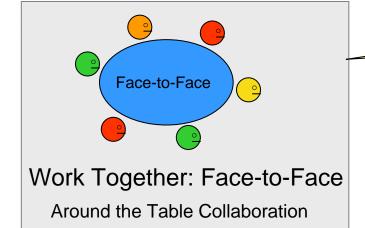*This is an interactive working session – please ask questions and discuss issues*

Overview:
Virtual Teams

How Do People Work?

Work Solo

Work Together: Remotely
Web-based Collaboration

Work Together: Face-to-Face
Around the Table Collaboration

- **Portals**

- **Wikis**

- **Enhanced Security Work Groups (ESWGs)**

Synchronous and A-synchronous collaboration functionality

Face-to-face equally important

- **Knowledge Based Risks**
- **Pause & Learn**
- **After Action Reviews**
- **Failure Case Studies**

5

What Are Virtual Teams?

Virtual teams are teams of people who primarily interact electronically and who may meet face-to-face occasionally.

Virtual Team Attributes

- Work across geographical and organizational boundaries
- Members have links strengthened by communication technology
- Members typically have complementary skills
- Are committed to a common purpose, have interdependent performance goals, and share an approach to work for which they hold themselves mutually accountable
- Meet face-to-face infrequently since they communicate electronically
- A virtual team does not always mean teleworker
  - Teleworkers are defined as individuals who work from home

What's Needed For Success

- **Frequent and Open Communication**

  Individuals must be willing and able to:
  - Discuss Issues, concerns, problems
  - Ask progress & task-related questions
  - Gather and share information relevant to other team members

- **Reliable, easy access to communication and web-based collaboration tools for all team members**

Communication

- **Consider the existing tool set:**
  (Teleconferences, Emails, Blackberry, IM, Texting, etc.)
  - Is it available to all members of the team?
  - Is it easy to use?
  - Is it reliable?
  - Is it appropriate to the task at hand?
  - Are all team members using it?

  - *Is it getting the job done?*

What are Web-based Collaboration Tools?

- **Interactive tools / capabilities that can be used to facilitate programs and projects, when face-to-face interaction is not possible**

Why? What are the Benefits?

- **Web-based collaboration functionality is implemented to:**

  – Help you (personally) work more effectively

  – Help your organization work more effectively

  – Help you achieve mission success

How Does it Help?

- **Cost Reduction**
  - Enables performance of work in most cost-effective location
  - Reduces travel & accommodation expenses
  - Increases access to skilled personnel across the agency
  - Enables telecommuting

- **Productivity & Effectiveness**
  - Applies most appropriate resources (from anywhere) to a job
  - Allows **asynchronous** meetings / work

- **Management Buy-In**
  - Tends to foster higher-up support
  - Allows staff to operate closer to customers

- **Improved Staff Satisfaction**
  - Provides opportunities to participate in more projects
  - Builds ongoing relationships/networks across business

What Tools Are Available?

Recommended – Wikis, Enhanced Security Work Groups & Portals

- **Wikis - Makes team meetings more productive.**
  - Provides virtual meeting places for asynchronous collaboration that over time become de facto data repositories

- **ESWG - Gives team members round-the-clock access to their secure virtual team workspace.**
  - Provides a "sense of place" where members can meet, capture, organize, interact and hold discussions prior to publishing information

- **Portals - Lets people access information effectively and efficiently wherever they are.**
  - Combines an intuitive environment with an enterprise content management system that enhances knowledge sharing

Wiki

n. a page or collection of Web pages designed to enable anyone who accesses it to contribute or modify content.

Breaking down the Wiki…

www.commoncraft.com/video-wikis-plain-english
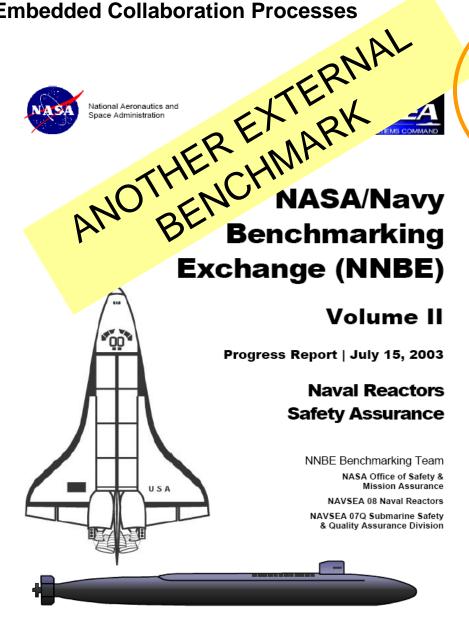
Doubts?

- **Why would I possibly need to waste my time with this stuff?**

- **I cannot imagine that anyone in NASA might find value in this…**

Nuclear Navy Program

Embedded Collaboration Processes

ANOTHER EXTERNAL BENCHMARK

National Aeronautics and Space Administration

NASA/Navy Benchmarking Exchange (NNBE)

Volume II

Progress Report | July 15, 2003

Naval Reactors Safety Assurance

NNBE Benchmarking Team

NASA Office of Safety & Mission Assurance

NAVSEA 08 Naval Reactors

NAVSEA 07Q Submarine Safety & Quality Assurance Division

COLLABORATIVE SAFETY MANAGEMENT APPROACH

NR Systems Managers
- Fluid Systems
- Electrical Systems

NR Component Managers
- Primary Components
- Valves
- Reactor
- Physics

NR Support Managers
- Reactor Safety & Analysis
- Environmental Health and Safety
- Radiological Controls and Chemistry
- Refueling
- Materials
- Operations and Training
- Financial
- External Affairs

NR Program Managers

NR Field Offices
- Prime Contractors (Labs)
- Naval Shipyards

Figure 3.4

NAVSEA 08

128 Million Miles traveled safely on nuclear propulsion

Has No SMA Organization

THEY RELY ON COLLABORATION

&

the Art of

"Over-communication"

16

Implementation @ NASA

Even OMB Gets It

Web-based Collaboration
Getting Started

6 Steps for Virtual Teams

Step 1: Founder Creates "Core Team"
- Clear & Concise Purpose
- Personal ROI
- Team ROI

Step 2A: Work Process – "Rapid BPA" – 10 Questions
- What comes in? – What goes out?
- What do you do?
- What do you produce?
- What information do you need to do your work?
- What people do you need to do your work?
- Who is the direct customer?
- Who else benefits from your product?
- What rules & requirements govern the work?
- What checks and controls do you implement?
- Who is your boss or your sponsor?
- How often do you deliver product?

Step 2B: Map Your Work Process

Step 3: Develop Your Knowledge Architecture
- Should Mirror the Work Process
- Should Have Elements of Plan/Do/Check

Step 4: Build Content Develop Content & Populate the Wiki or CoP Knowledge Architecture

Step 5: Build the Team Expand the Team to Include All Individuals Necessary to Perform the Work

Step 6: Work
- Individually - find information you need to do your job more effectively – build on past examples
- Collectively – collaborate asynchronously to develop work products

19

1. Establish Core Team & Statement of Purpose

- **Core Team**
  - Founder, Administrator, and initial team members
  - Provides initial structure and initial content for Wiki (or ESWG)

- **Statement of Purpose**
  - Clearly and concisely states the reason for creating the virtual team
    - Helps keep the group focused
    - Avoids creating "granny's attic" – a place where things go and get lost
  - Addresses Return on Investment
    - How will creating this Wiki benefit you?
    - How will creating this Wiki benefit the entire virtual team?

2. Understand Your Work Process

- **Conduct "Rapid Business Process Analysis"**

  - What do you do?   - What do you produce?
  - Who is the customer?   - Who benefits from your product?
  - What information do you need to do work?
  - What rules and requirements govern your work?
  - What checks and controls do you implement?
  - etc.

- **Map your Work Process**

  – Develop a WBS, graphical flow-chart, bulleted list, or other means to capture and summarize your work process at a high level

  – Answer the question:

  "How will your Wiki help get work done?"

21

3. Develop a Knowledge Architecture

- The Knowledge Architecture represents the underlying foundation and organizational structure of your Wiki content
    - Should mirror the Work Process
    - Should have elements of Plan / Do / Check
    - Navigated through Wiki spaces and hyperlink chains

- Knowledge Architecture Taxonomies can be:
    - Issue-based
    - Work Breakdown Structure-based
    - Events-based
    - Function-based

Knowledge Architecture Example

PROCESS BASED MISSION ASSURANCE (PBMA) FRAMEWORK
A Systems Approach for Safety & Mission Success Management

	Formulation			Implementation				
Project Phase / **Elements**	**1.0** Program Management	**2.0** Concept Development	**3.0** Acquisition	**4.0** Hardware Design	**5.0** Software Design	**6.0** Manufacturing	**7.0** Pre-Ops Int & Test	**8.0** Operations
0.1 Policies — *Rules and Guidelines We Need To Follow*	1.1 - NPD 8700.1 - NPD 7120.4B - NPR 7120.5C - Public Law 105-275	2.1 - NPR 7120.5C - Human Rating - Payload Safety - Tech Standards - Vol. & Consensus Standards	3.1 - R-BAM - FAR - NASA FAR Sup - NPR 7120.5C - OMB Circulars - DoD 5000	4.1 - NPR 7120.5C - NPD 8710.5 and stubs - NPD 8730.3 and stubs - Orbital Debris - Human Rating	5.1 - NPR 7120.5C - NASA STD-8719.13A - NPD 8730.3 and stubs - IV&V - Tech Transfer	6.1 - NPR 7120.5C - NPD 8730.3 and stubs - NEQA Docs - Tech Standards - Vol. & Consensus Standards	7.1 - NPR 7120.5C - NPD 8610.24A - ELV Policies - Vol. & Consensus Standards	8.1 - NPR 7120.5C - Nuclear Safety - Planetary Protect - Orbital Debris - EWR 127-1 - Range Cmd Council (RCC)
0.2 Planning — *Defining and Organizing the Things We Need To Do*	1.2 - Program Plans - S&MA Plan - Risk Mgmt Plan - Program Safety - QA Plan - Config Mgmt Plan	2.2 - Life Cycle Req's Planning - Long Lead Compliance	3.2 - Develop SOW - Acq Strategy Plan - Contractor Surveilance Plan	4.2 - Concurrent Eng Plan - System Spec - Design Req Mgmt Plan - Material & Parts Plan	5.2 - Software Dev Mgmt Plan	6.2 - Work Review Plans - Supply Chain Mgmt Plan - Trans Handling and Storage Plan - Contam Control	7.2 - Develop Integ & Test Req's - Pre-Ops Int & Test Plan	8.2 - Fit Safety Assur Planning - Range Safety - Gmd Ops Safety - Ops FMEA - Emergency Prep - Contigency Plan
0.3 Processes — *Doing the Things We Need To Do*	1.3 - Resource Mgmt - Schedule Mgmt - Doc and Data Mgmt System	2.3 - Req's Analysis - Functional Analysis & Aloc - Pert Metrics - WBS - Verif Concept	3.3 - Develop Acq. Instruments - Acq. Lessons Learned	4.3 - Implement Adv Quality - Design-for-X - Human Factors - Tools & Techniques	5.3 - Software FMEA - Human Factors - Tools & Techniques	6.3 - Implement Adv Quality	7.3 - Flight H/W & S/W Intergrated Testing - Conduct Demo, Inspections - SMA Verification Activities - Working Groups	8.3 - Environ Impact Assessment - Safety & Risk Trend Analysis - Real-Time Ops Support
0.4 Program Control — *Checks and Balances*	1.4 - Implement Config - Mgmt - Milestone Review - Implement Msn Success Plans - Employ IA	2.4 - Concept Dev Reviews - Risk Assess Reviews - Science Theme Conformance	3.4 - Implement R-BAM - Train Source Eval Board - Due Diligence - Tools and Techniques	4.4 - Sys Safety Hazard Analysis - Design Verif Processes - Employ IA	5.4 - Process Maturity (CMM) - S/W Safety and Hazard Analysis - Milestone Rev's - Design Verif - Employ IA	6.4 - Change Control - Process Capab - Work Control Processes - Material Review Board - Employ IA	7.4 Pre-Ops Int & Test inherent control & verif functions	8.4 - Ops readiness Reviews - IA of Ops Readiness
0.5 Verification and Testing	1.5 - Program Team Capabilities - Cost/Resource Balance - Pgm Reserves and Margins	2.5 Verification implicit in control processes	3.5	4.5 - Verif. Plan - Conduct Analysis, Demonstration, Similarity, Inspection, Modeling & Sim	5.5 - S/W Verification Test Plan - Formal Methods -Conduct Testing	6.5 - Verification Plan - Conduct Test, Demonstration	7.5	8.5 Verification implicit in control process

23

4. Build Content

- **Populate, refresh, and manage knowledge artifacts within the Wiki taxonomy**
  - Ensure the Wiki is frequently updated and doesn't grow stale
    - Implement critical links to documents and other web-based resources
    - Upload critical documents to the wiki page
    - Ensure all links are functional
  - Evolve the Wiki over time

Wikis are only as good as you make them!

5. Build the Team

- Expand the team to include all individuals necessary to do work
  - Invite process participants and content providers critical to meeting team objectives
  - Invite customers and/or stakeholders

- Manage Permissions
  - Assign permissions as soon as new member join your virtual team
  - Certain members should have ease of access and/or edit rights
  - Other members may only have view / comment permissions

25

6. Collaborate on Work
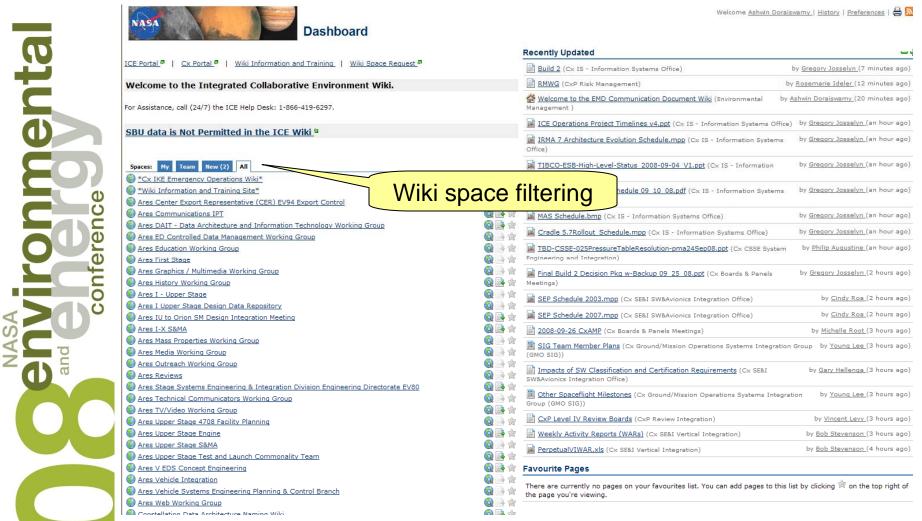
- **Getting started is hard – keep your forward momentum going by using your Wiki to get work done**
  - **Individually:** find information you need to do your job more effectively
  - **Collectively:** collaborate asynchronously to develop work products

The secret to success is integrating Web-based collaboration seamlessly into your work process.
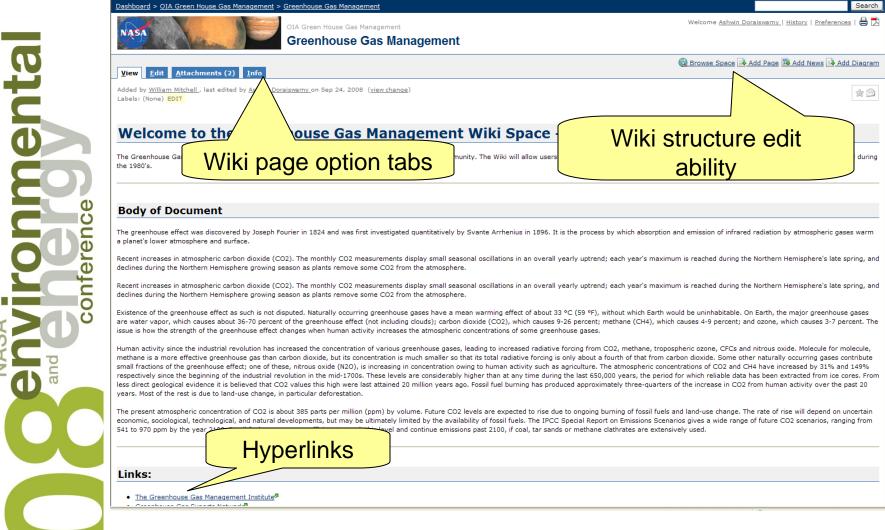
Wikis for

Environmental

Management
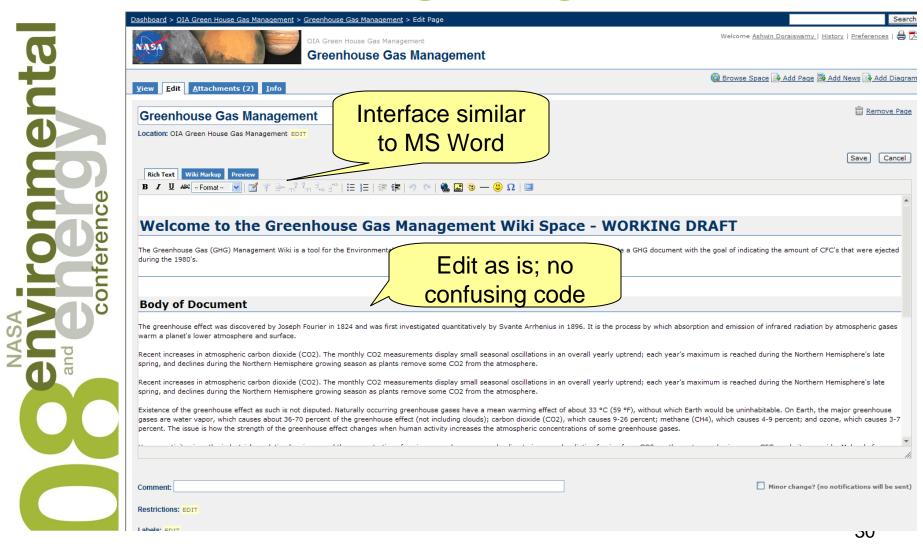
The Wiki Dashboard
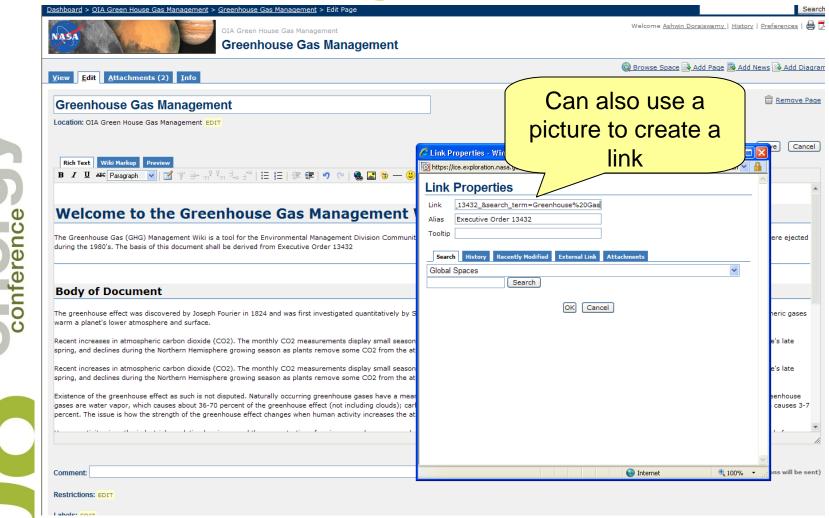
The Greenhouse Gas Wiki
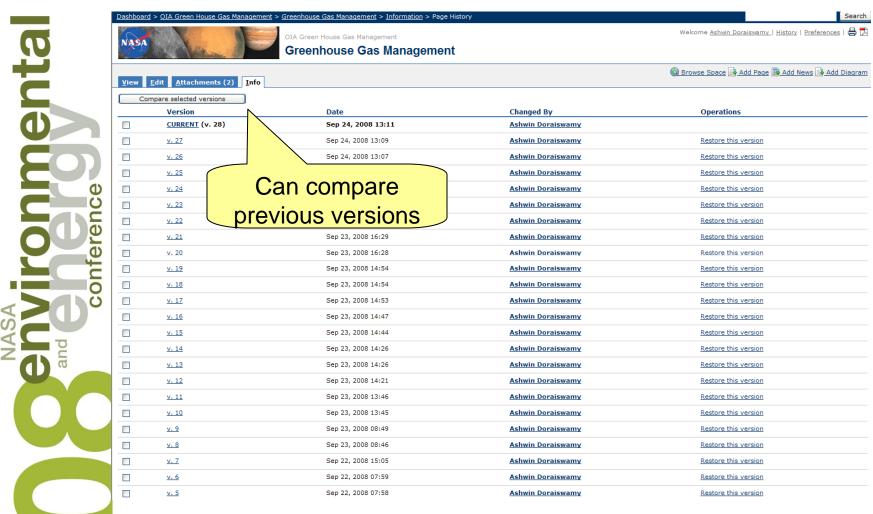
Adding / Editing Content Using "WYSIWYG"
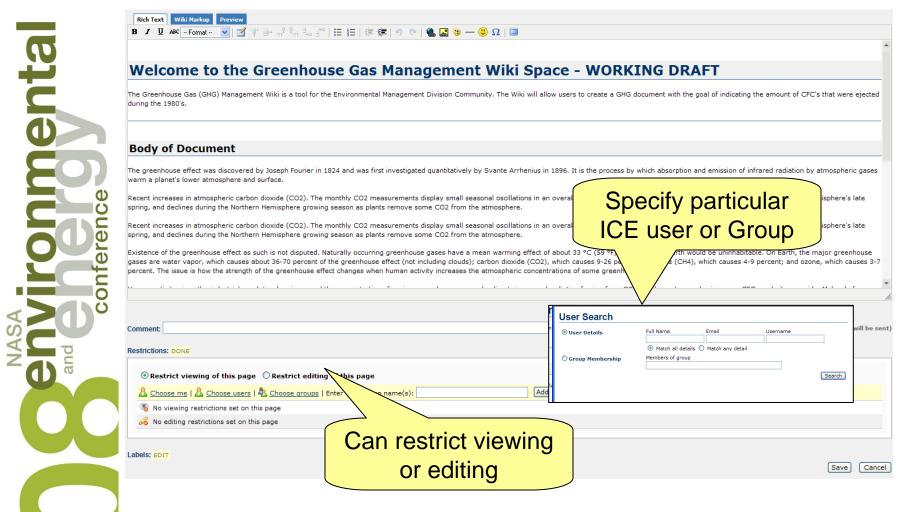
Utilizing Links
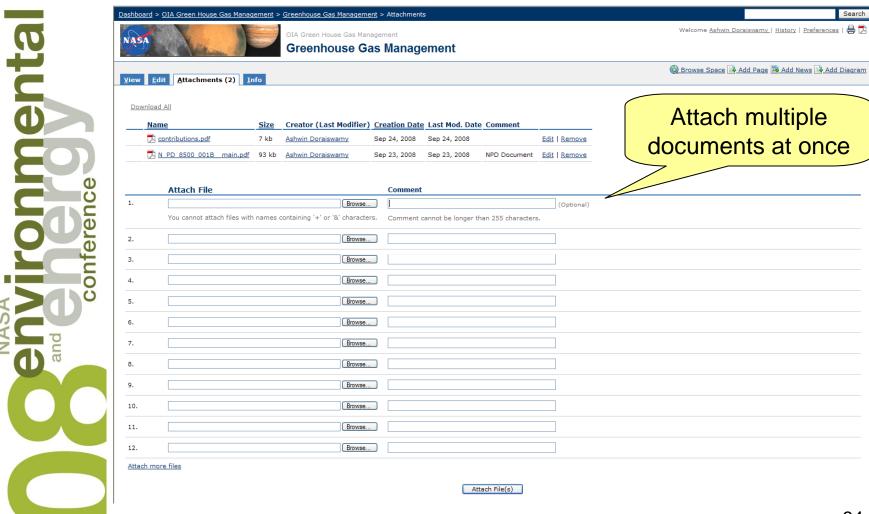
Viewing Version History

Setting Restrictions & Permission Levels

Specify particular ICE user or Group

Can restrict viewing or editing

Adding Attachments

Adding Comments

Human activity since the industrial revolution has increased the concentration of various greenhouse gases, leading to increased radiative forcing from CO_2, methane, tropospheric ozone, CFCs and nitrous oxide. Molecule for molecule, methane is a more effective greenhouse gas than carbon dioxide, but its concentration is much smaller so that its total radiative forcing is only about a fourth of that from carbon dioxide. Some other naturally occurring gases contribute small fractions of the greenhouse effect; one of these, nitrous oxide (N_2O), is increasing in concentration owing to human activity such as agriculture. The atmospheric concentrations of CO_2 and CH_4 have increased by 31% and 149% respectively since the beginning of the industrial revolution in the mid-1700s. These levels are considerably higher than at any time during the last 650,000 years, the period for which reliable data has been extracted from ice cores. From less direct geological evidence it is believed that CO_2 values this high were last attained 20 million years ago. Fossil fuel burning has produced approximately three-quarters of the increase in CO_2 from human activity over the past 20 years. Most of the rest is due to land-use change, in particular deforestation.

The present atmospheric concentration of CO_2 is about 385 parts per million (ppm) by volume. Future CO_2 levels are expected to rise due to ongoing burning of fossil fuels and land-use change. The rate of rise will depend on uncertain economic, sociological, technological, and natural developments, but may be ultimately limited by the availability of fossil fuels. The IPCC Special Report on Emissions Scenarios gives a wide range of future CO_2 scenarios, ranging from 541 to 970 ppm by the year 2100. Fossil fuel reserves are sufficient to reach this level and continue emissions past 2100, if coal, tar sands or methane clathrates are extensively used.

Links:

- The Greenhouse Gas Management Institute
- Greenhouse Gas Experts Network
- Greenhouse Gas Emissions Management

External Requirements

- Executive Order 13432
- The National Environmental Protection Act (NEPA) - 1969
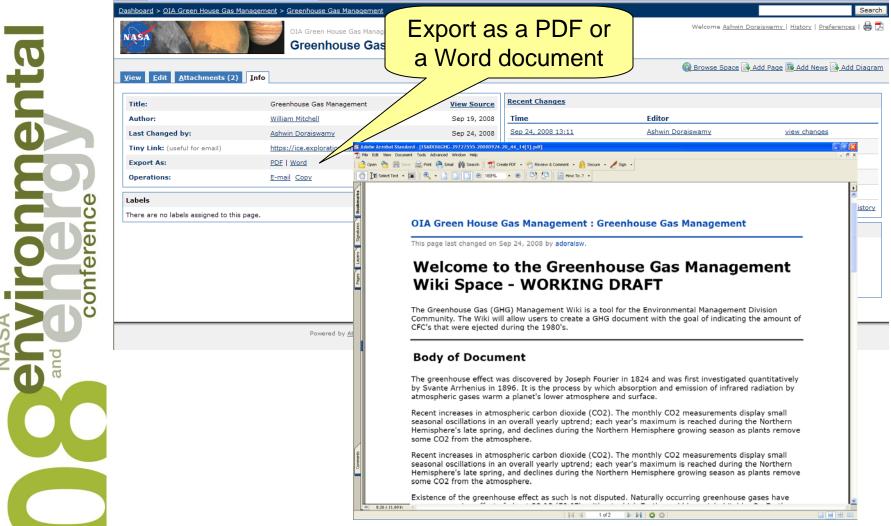
Comments (Hide Comments)

| Rich Text | Wiki Markup | Preview |

B *I* <u>U</u> -- Format --

[Post] [Cancel]

Easy to use Rich Text format

35

Exporting the Wiki

The EMD Communications Wiki

A New Theme

RSS Feeds

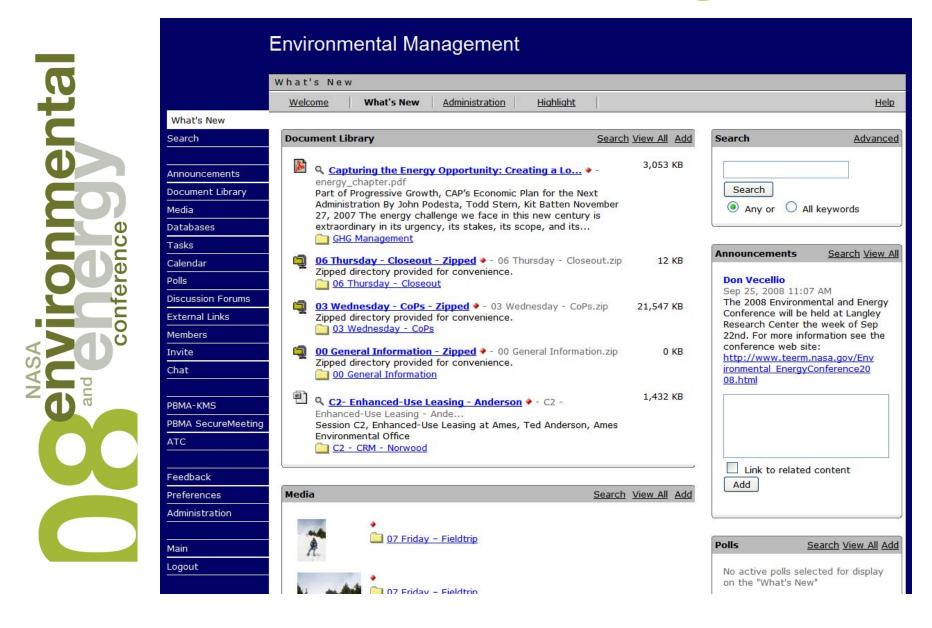# Enhanced Security Work Groups (ESWGs)

An Overview

ESWGs

- **Provide quick and easy access to critical information to support program/project managers and professionals across all NASA programs and projects.**

- **Key Functions include:**
  - **Home Page (What's New, Announcements, Links)**
  - **Document Sharing (Upload/Download)**
  - **Calendar**
  - **Polls**
  - **Threaded Discussions**
  - **Database Functionality**
  - **Permissions-based Access**
    - **Private or public displaying for all content**
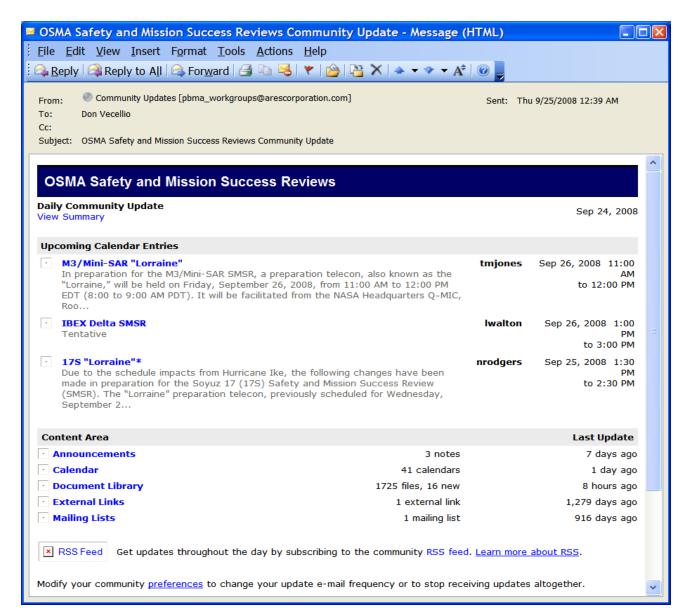
Why use an ESWG, not a Wiki?

- **Need to collaborate with external organizations (Gov't, Industry, Academia)**
  - Include them in your Virtual Team
  - Keep "in the loop" and share info

- **Need to work on SBU or other sensitive data**
  - ITAR/EAR
  - SEB / Proprietary Data
  - "Pre-decisional data
  - *(NOT CLEARED for Classified / National Security Information)*

- **Currently more than 750 ESWGs and 10,000+ users**
  - You may get involved with existing Communities of Practice / Virtual Teams
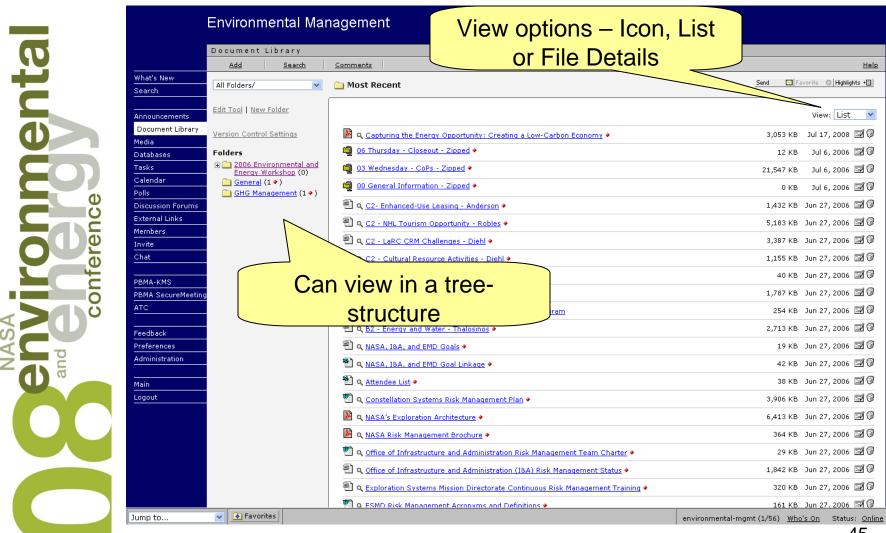 - Tool functionality is nearly the same
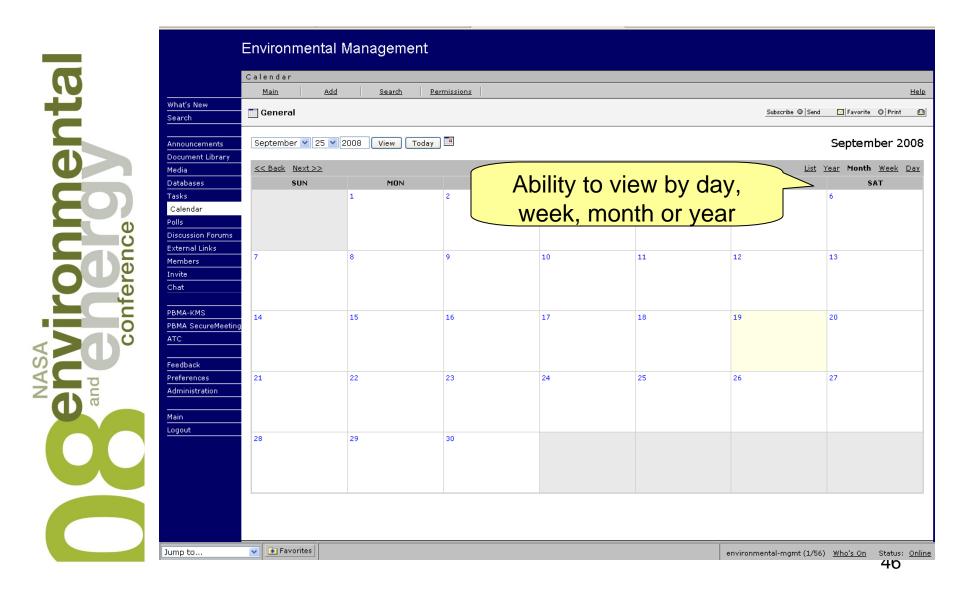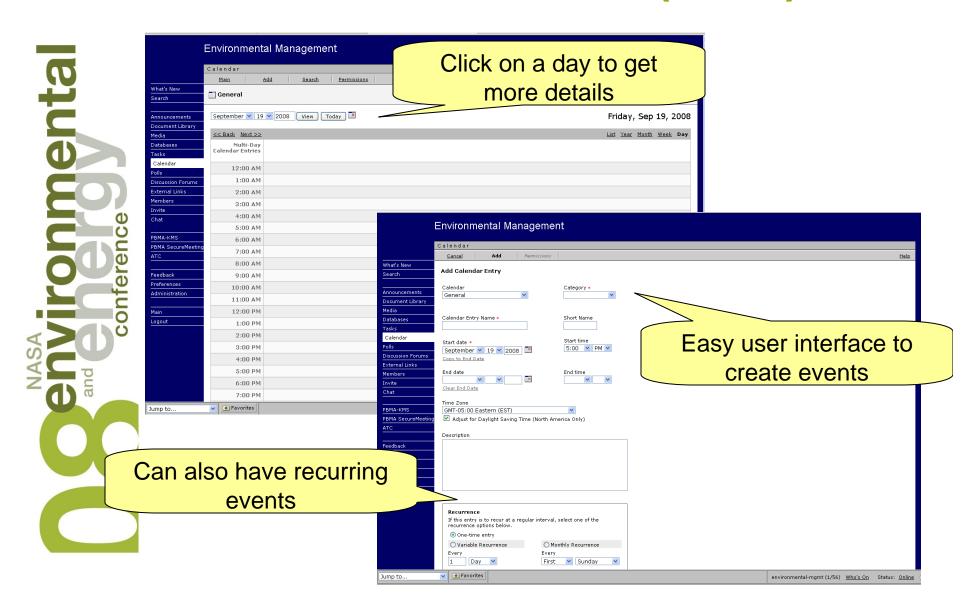
ESWG – Home Page

ESWG – What's New - Email

ESWG – Document Library

45

ESWG - Calendar
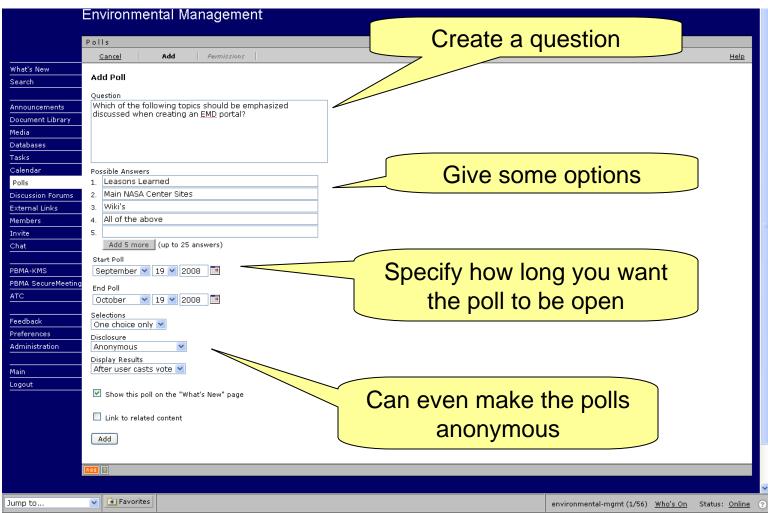
ESWG – Calendar (cont.)
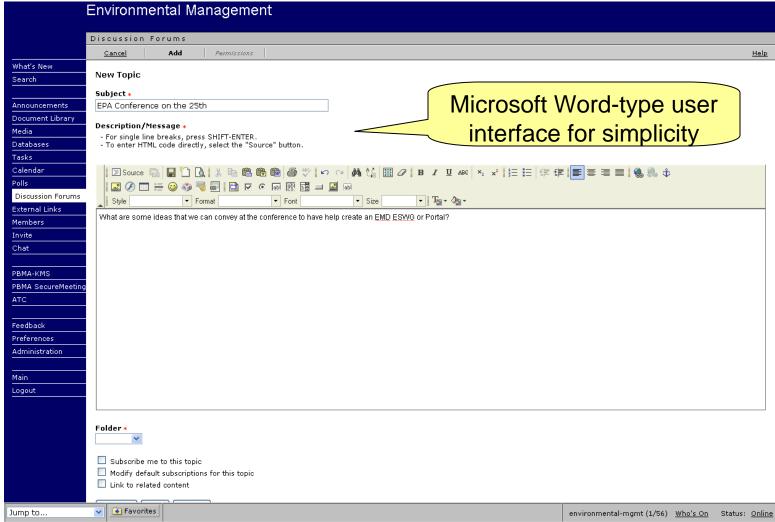
ESWG - Polls
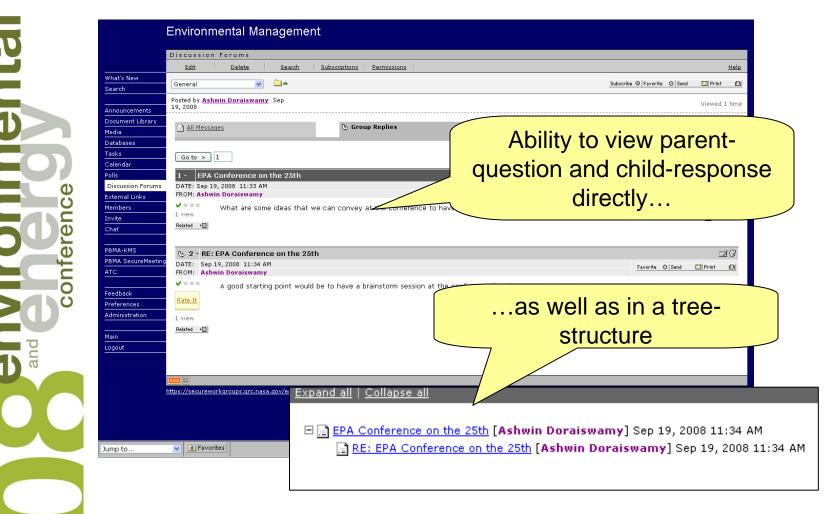
ESWG – Threaded Discussions
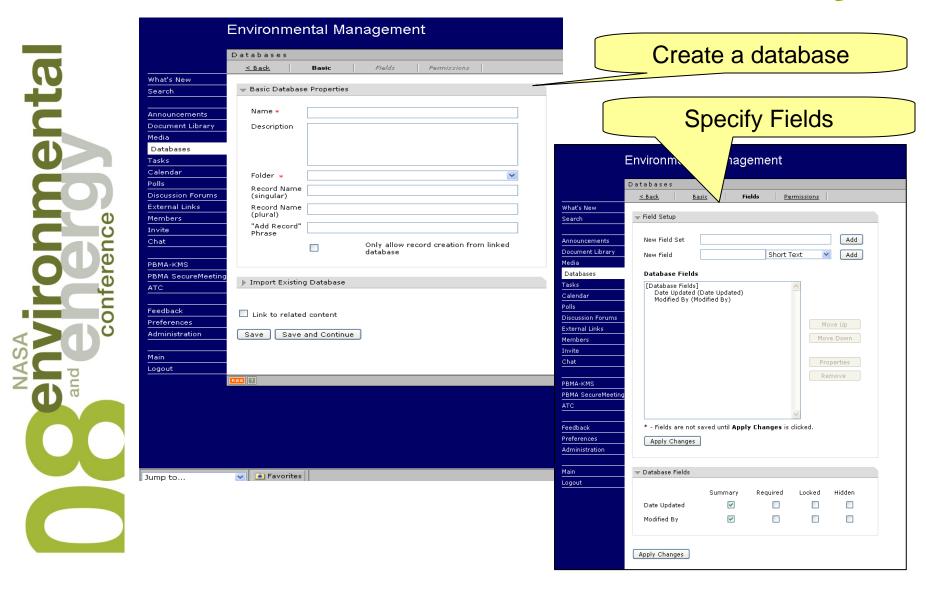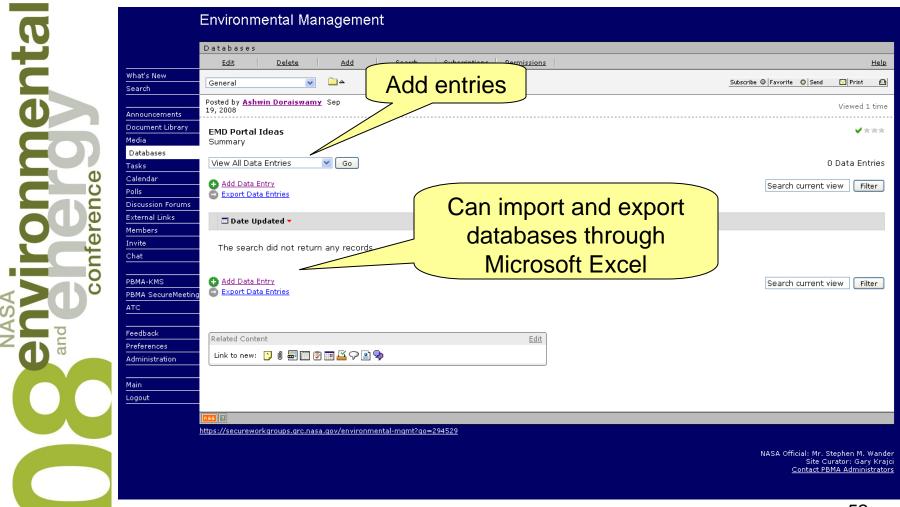
ESWG – Threaded Discussions (cont.)

ESWG – Database Functionality

Create a database

Specify Fields

ESWG – Database Functionality (cont.)

52

Portals

The ICE Portal
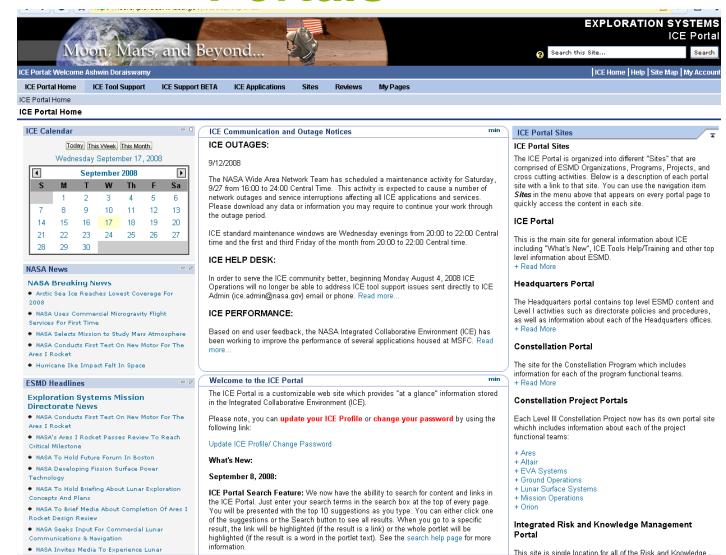
- **Provides a wide array of resources and services for the ESMD Risk and Knowledge Management community.**

- **Portlets expose you to the existing practices aid in the effort to integrate risk and knowledge management over NASA designed to generate and share knowledge for reuse.**

54

Implementation @ NASA - Portals

Portal for
Environmental Management Division

The ICE Portal

Easy Navigation

Quick link to video nuggets

57

Knowledge Based Risks

Identification / Mitigation of Risk

Lessons Learned

Lessons Learned – Accident Investigation

Pause and Learn (PaL)

Virtual Teams Page

Get Connected @ ESMD   min edit

What is a "Virtual Team"?

Why should I create a Virtual Team?

How do I create a Virtual Team?

Want to learn more about Virtual Teams? Click here for a startup guide.

Implementing Hi-Performing Virtual Teams   min edit

Step 1: Founder Creates "Core Team"
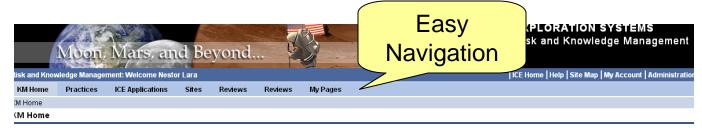- Clear & Concise Purpose
- Personal ROI
- Team ROI

Step 2A: Work Process – "Rapid BPA" – 10 Questions
- What comes in? – What goes out?
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Step 4: Build Content
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Expand the Team to Include All Individuals Necessary to Perform the Work

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- individually - find information you need to do your job more effectively – build on past examples
- collectively – collaborate asynchronously to develop work products

ESMD Wikis

Checkout the ESMD Wiki Dashboard

Related Wiki spaces:
- ESMD Risk and Knowledge Management

PBMA Communities of Practice

- **ESMD**
  - ESMD Risk and Knowledge Management
  - ARES I-1 S&MA
  - CLV Insight
  - ESMD EVM Workgroup
  - ESMD Risk Database Integration Group
  - Preparing for Human Exploration to Mars
- **Risk Management**
  - Human Health Risk Assessment Team
  - MSFC Continuous Risk Management
- **Knowledge Management**
  - Collaboration Technologies
  - NASA Semantic Technology

DAU Communities of Practice

- Risk Management
- Science, Technology, and Management
- Systems Engineering
- Production Quality & Manufacturing

Professional Communities of Practice

- INCOSE Risk Management Working Group

63

EMD Portal Objective

- **Provide a "One Stop Shop" for:**
    - Environmental news (HQ and Centers)
    - Environmental management websites (internal and public)
    - Top-level environmental metrics
    - Mission pages (within ICE and elsewhere)
    - CoP Wiki sites
    - CoP ESWGs
    - Knowledge sharing and lesson learned capture
    - Environmental and Risk management processes, best practices, and tools
    - Environmental Lessons learned and Training

Group Exercise

65

Group Exercise

- **We would like your help getting feedback and understanding the needs of the community for:**

  1. **EMD Portal Content and Functionality**
     - "Desirement" and Short Description

  2. **Future Wikis and ESWGs**
     - Title, Purpose (1-2 sentences), Type (Wiki or ESWG)

  3. **Potential Environmental KBR Topics**
     - Subject, Lesson Learned (1-2 sentences), POC

Next Steps…

How Do I Get an ICE Account?

How Do I Start a Wiki?

How do I Start an ESWG?

Requesting an ICE Account

- Enter the following URL: **https://ice.exploration.nasa.gov/Windchill/netmarkets/register/register.jsp**

- Fill out the various information fields requested, and then click **Next>>**

- Select any other applications within ICE that you are requesting access and then click **Next>> (Note: No additional access is required for a Wiki).**

- Type out a brief justification for your account request, read the user agreement, and then click **Accept.**

Requesting a Wiki

- **Note: <u>You MUST be a NASA civil servant with an ICE account to request a Wiki.</u>**

- **Enter the following URL: <u>https://ice.exploration.nasa.gov/ice/site/iceportal/wiki_request/</u>**

- **Fill out the required information, including a justification for your request.**

- **Click Submit Request.**

69

Requesting an ESWG Account

- **Enter the following URL: https://secureworkgroups.grc.nasa.gov/**

- Click **Create an Account.**

- **Fill out the various information fields requested.**

- Click **Submit Request.**

- **After activation, go to the link above to log in and to browse available ESWG groups**

Creating a New ESWG Group

- **Enter the following URL:** http://pbma.nasa.gov/secureworkgroups_main_cid_19

- Click on **Request a New Enhanced Security Work Group.**

- **Fill out the requested information fields**

- Click **Send Request.**

References

- *"Building High-Performance Virtual Teams"*. Ian Beeson - The Performance Through Development Group. 2006.

- *"Web-Enabled Virtual Teams"*. Dr. Steve Newman - ARES Corporation. 2008.

- "CommonCraft: Wikis in Plain English" - www.commoncraft.com/video-wikis-plain-english